CLAIMS:

1. A heat-transfer pipe with internal grooves, wherein

a plurality of rows of grooves arranged in V-shaped patterns (3) symmetric with respect to a pipe axis direction are provided on an inner surface (2) of a pipe body (1a); and

widths of the plurality of rows of the grooves (3) arranged in the V-shaped patterns are made unequal in a circumferential direction.

2. The heat-transfer pipe with internal grooves according to claim 1, wherein

secondary grooves (6) having a prescribed depth are formed from a top (5a) side towards a base (5b) side at least in part of projected portions (5) formed between respective grooves (3) of the plurality of rows of the grooves (3) arranged in the V-shaped patterns.

3. The heat-transfer pipe with internal grooves according to claim 2, wherein

the secondary grooves (6) are notched grooves in a spiral direction.

4. The heat-transfer pipe with internal grooves according to claim 1, wherein

secondary grooves (7) having a prescribed depth are formed in an outer surface of at least part of projected

portions (5) formed between respective grooves (3) of the rows of grooves (3) arranged in the V-shaped patterns.

5. The heat-transfer pipe with internal grooves according to claim 4, wherein

the secondary grooves (7) are fine grooves extending from one side surface of the projected portions (5) to the other side surface thereof.

6. A method for manufacturing a heat-transfer pipe with internal grooves, wherein

a first marking roll (11) for marking a plurality of rows of grooves (3) arranged in V-shaped patterns in a flat plate-like heat-transfer pipe material (13), a second marking roll (12) for marking secondary grooves (7) at least in part of projected portions (5) formed between respective grooves (3) of the plurality of rows of the grooves (3) arranged in the V-shaped patterns and a roll forming device (17) for forming the flat plate-like heat-transfer pipe material (13) into a cylindrical pipe are used to continuously mark the plurality of rows of the grooves (3) arranged in the V-shaped patterns and the secondary grooves (7) in the flat plate-like heat-transfer pipe material (13) successively by the first and second marking rolls (11), (12) and then form a cylindrical pipe by roll forming by the roll forming device (17).

7. A device for manufacturing a heat-transfer pipe

with internal grooves, wherein

a first marking roll (11) for marking a plurality of rows of grooves (3) arranged in V-shaped patterns in a flat plate-like heat-transfer pipe material (13), a second marking roll (12) for marking secondary grooves (7) at least in part of projected portions (5) formed between respective grooves (3) of the plurality of rows of the grooves (3) arranged in V-shaped patterns and a roll forming device (17) for forming the flat plate-like heat-transfer pipe material (13) into a cylindrical pipe are provided successively side by side in a direction of movement of the flat plate-like heat-transfer pipe material (13) to continuously mark the grooves (3) arranged in the V-shaped patterns and the secondary grooves (7) successively by the first and second marking rolls (11), (12) and then form a cylindrical pipe by roll forming by the roll forming device (17).